MOTOR MOUNTS
FOR SIMO SERIES
PROVIDE PRE-ENGINEERED ALIGNMENT
Product Comparison

**PBC LINEAR’S DESIGN WITH PRE-ENGINEERED ALIGNMENT**
- One-piece main frame holds shaft-to-shaft centerline
- Extends motor and coupler life
- Increases accuracy and repeatability
- Easy to assemble

**PROBLEMATIC DESIGNS CAUSE MIS-ALIGNMENT**
- Mis-alignment between motor shaft, coupler, and screw shortens life and affects motion quality
- Mis-alignment results in camming or lobbing motion that translates to inconsistent linear movement
- Difficult to align and prone to deflection
- Over-torque of coupler causes accuracy loss

**PROBLEM #1: DEFLECTION**

**PROBLEM #2: TWIST**

**PROBLEM #3: OFF CENTERLINE**
Lead Screw or Ball Screw Driven System

<table>
<thead>
<tr>
<th>Screw Driven SIMO Series System</th>
<th>Motor Size</th>
<th>Part Number</th>
<th>Recommended Coupler</th>
<th>Included with Motor Mount Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Screw or Ball Screw</td>
<td>40 mm</td>
<td>UGA040A-3PMM-SE</td>
<td>R + W EXL5</td>
<td>(1) Adapter plate with 2 SBHCS</td>
</tr>
<tr>
<td>UGA (low profile) or UGT (tall profile)</td>
<td>42 mm NEMA 17</td>
<td>UGA040A-3PMM-SF</td>
<td></td>
<td>(1) Main frame with 4 SBHCS</td>
</tr>
<tr>
<td></td>
<td>56 mm - 58 mm NEMA 23</td>
<td>UGA040A-3PMM-SG</td>
<td>Maximum coupler dimensions: 25 mm O.D. x 26 mm length</td>
<td>(1) Motor plate with 3 SBHCS</td>
</tr>
<tr>
<td></td>
<td>60 mm</td>
<td>UGA040A-3PMM-SH</td>
<td></td>
<td>(1) Cover (plastic)</td>
</tr>
<tr>
<td>Blank Plate (customer machined)</td>
<td></td>
<td>UGA040A-3PMM-S0</td>
<td></td>
<td>* Customer supplies motor screws</td>
</tr>
</tbody>
</table>

- Pre-engineered to hold centerlines
- 5 mm stub shaft diameter

**MOTOR MOUNT LENGTH**

<table>
<thead>
<tr>
<th>Type of SIMO System</th>
<th>Motor Size</th>
<th>40 mm</th>
<th>42 mm (NEMA 17)</th>
<th>56 mm - 58 mm (NEMA 23)</th>
<th>60 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw Driven</td>
<td>mm</td>
<td>54.0</td>
<td>53.7</td>
<td>54.3</td>
<td>59.0</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>2.125</td>
<td>2.115</td>
<td>2.139</td>
<td>2.322</td>
</tr>
</tbody>
</table>

Motor Length - Motor Mount Length (X) - SIMO Actuator

- Adapter Plate
- Main Frame
- Optional Riser Plate (used with UGA Low Profile Simo)
- 21.6 mm Overall Stub Shaft Length
- 7.427 mm Stub Shaft Length for Coupler Engagement
Horizontal Belt Driven System

<table>
<thead>
<tr>
<th>Belt Driven SIMO Series System</th>
<th>Motor Size</th>
<th>Part Number</th>
<th>Recommended Coupler</th>
<th>Included with Motor Mount Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Belt UGT Tall Profile</td>
<td>40 mm</td>
<td>UGA040A-3PMM-HE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42 mm NEMA 17</td>
<td>UGA040A-3PMM-HF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>56 mm - 58 mm NEMA 23</td>
<td>UGA040A-3PMM-HG</td>
<td>R + W EKL5 Maximum coupler dimensions: 26 mm O.D. x 26 mm length</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60 mm</td>
<td>UGA040A-3PMM-HH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blank Plate (customer machined)</td>
<td>UGA040A-3PMM-H0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Main frame mounts directly to pulley housing
- Pre-engineered to hold centerlines
- 10 mm stub shaft diameter

**Motor Mount Length**

<table>
<thead>
<tr>
<th>Type of SIMO System</th>
<th>40 mm</th>
<th>42 mm (NEMA 17)</th>
<th>56 mm - 58 mm (NEMA 23)</th>
<th>60 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>46.2</td>
<td>45.9</td>
<td>46.5</td>
<td>51.2</td>
</tr>
<tr>
<td>inches</td>
<td>1.817</td>
<td>1.807</td>
<td>1.831</td>
<td>2.014</td>
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</tbody>
</table>
**Vertical Belt Driven System**

<table>
<thead>
<tr>
<th>Belt Driven SIMO Series System</th>
<th>Motor Size</th>
<th>Part Number</th>
<th>Recommended Coupler</th>
<th>Included with Motor Mount Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Belt UGA Low Profile</td>
<td>40 mm</td>
<td>UGA040A-3PMM-VE</td>
<td>R + W EXL5</td>
<td>(1) Main frame with 4 SBHCS (Socket Button Head Cap Screw)</td>
</tr>
<tr>
<td></td>
<td>42 mm</td>
<td>UGA040A-3PMM-VF</td>
<td></td>
<td>(1) Motor plate with 3 SBHCS for attaching to frame*</td>
</tr>
<tr>
<td></td>
<td>56 mm - 58 mm NEMA 23</td>
<td>UGA040A-3PMM-VG</td>
<td>Maximum coupler dimensions: 25 mm O.D. x 26 mm length</td>
<td>(1) Cover (plastic)</td>
</tr>
<tr>
<td></td>
<td>60 mm</td>
<td>UGA040A-3PMM-VH</td>
<td></td>
<td>* Customer supplies motor screws</td>
</tr>
<tr>
<td></td>
<td>Blank Plate (customer machined)</td>
<td>UGA040A-3PMM-V0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Main frame mounts directly to pulley housing
- Pre-engineered to hold centerlines
- 5 mm stub shaft diameter

**MOTOR MOUNT LENGTH**

<table>
<thead>
<tr>
<th>Motor Size</th>
<th>Horizontal &amp; Vertical Belt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40 mm</td>
</tr>
<tr>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>inches</td>
<td>46.2</td>
</tr>
<tr>
<td></td>
<td>1.817</td>
</tr>
</tbody>
</table>

6.15 mm Stub Shaft Length for Coupler Engagement
12.5 mm Overall Stub Shaft Length
Motor Plate Dimensions

**MOTOR SIZE: 40 MM**
- Material: Anodized aluminum

**MOTOR SIZE: 42 MM (NEMA 17)**
- Material: Anodized aluminum

**MOTOR SIZE: 56 MM – 58 MM (NEMA 23)**
- Material: Anodized aluminum

**MOTOR SIZE: 60 MM**
- Material: Anodized aluminum
BLANK PLATE

- Intended use: To give customers the ability to machine the plate to match non-standard motor configurations
- Material: Anodized aluminum
- Tip: It is best to clamp on center hole when machining hole pattern for motor attachment.

MAIN FRAME

- Material: Die cast aluminum, clear chromate
Design Considerations

COUPLER

- Simo Series motor mounts are designed to work optimally with the R+W EKL5 coupler
- Other couplers can be used under the following conditions:
  - Maximum O.D. = 25 mm
  - Maximum length = 26 mm
  - Coupler should be sized per the Simo Series actuator. See the Simo Series catalog for specifications or click here to view it online.

**CAUTION**

Verify coupler bore diameters and depths will accept both actuator stub shaft and motor shaft.

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**STUB SHAFT DIMENSIONS**

<table>
<thead>
<tr>
<th>Type of SIMO System</th>
<th>Screw Driven</th>
<th>Horizontal Belt</th>
<th>Vertical Belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stub Shaft Diameter</td>
<td>5 mm</td>
<td>10 mm</td>
<td>5 mm</td>
</tr>
<tr>
<td>Overall Stub Shaft Length</td>
<td>21.6 mm</td>
<td>12.5 mm</td>
<td>12.5 mm</td>
</tr>
<tr>
<td>Stub Shaft Length for Coupler Engagement</td>
<td>7.427 mm</td>
<td>6.15 mm</td>
<td>6.15 mm</td>
</tr>
</tbody>
</table>
Assembly Procedure – Screw Driven System

**SIMO SERIES UGA/UGT WITH LEAD SCREW**

Components:
- Base actuator unit
- Motor (customer supplied)
- Motor Mount Kit
  - Adapter Plate
  - Motor Plate
  - Main Frame
  - Cover
- Coupler (customer supplied)

Fasteners: (9) M4 x 12 mm SBHCS (supplied by PBC Linear),
(4) Customer supplied motor fasteners (See Table 2)

Tools Required: Hex Key (See Table 1)

Suggested Thread Locker: Blue Loctite® 242 or equivalent

**ASSEMBLY STEPS**

**SIMO SERIES – UGA (LOW PROFILE)**

1. Install lead screw adapter plate to actuator end cap using hex key and (2) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
2. Slide coupling onto shaft and leave loose.
3. Install main frame to lead screw adapter plate using (4) M4 x 12 mm SBHCS. Snug fasteners, but do not tighten.
4. Install motor plate to main frame using (3) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
5. Install motor to motor plate with customer supplied fasteners (See Table 2) and install shaft into coupling. Snug fasteners, but do not tighten.
6. Manually move carriage plate to align coupler and motor.
7. Check for proper shaft engagement on both sides (per coupler manufacturer specs).
8. Once system is aligned, final torque all fasteners appropriately (See Table 3).
9. Install cover on pins in casting (snaps in place).

**SIMO SERIES – UGT (TALL PROFILE)**

1. Install lead screw adapter plate to actuator end cap using hex key and (2) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
2. Slide coupling onto shaft and leave loose.
3. Install main frame to lead screw adapter plate using (4) M4 x 12 mm SBHCS. Snug fasteners, but do not tighten.
4. Install motor plate to main frame using (3) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
5. Install motor to motor plate with customer supplied fasteners (See Table 2) and install shaft into coupling. Snug fasteners, but do not tighten.
6. Manually move carriage plate to align coupler and motor.
7. Check for proper shaft engagement on both sides (per coupler manufacturer specs).
8. Once system is aligned, final torque all fasteners appropriately (See Table 3).
9. Install cover on pins in casting (snaps in place).
Assembly Procedure – Horizontal Belt Driven System

SIMO SERIES UGT WITH HORIZONTAL BELT

Components:
- Base actuator unit
- Motor (customer supplied)
- Motor Mount Kit
  - Motor Plate
  - Main Frame
  - Cover
- Coupler (customer supplied)

Fasteners: (7) M4 x 12 mm SBHCS (supplied by PBC Linear), (4) Customer supplied motor fasteners (See Table 2)

Tools Required: Hex Key (See Table 1)

Suggested Thread Locker: Blue Loctite® 242 or equivalent

SIMO SERIES – UGT (TALL PROFILE)

1. Install main frame to pulley housing using hex key and (4) M4 x 12 mm SBHCS. Snug fasteners, but do not tighten.
2. Slide coupling onto shaft and leave loose.
3. Install motor plate to main frame using (3) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
4. Install motor to motor plate with customer supplied fasteners (See Table 2) and install shaft into coupling. Snug fasteners, but do not tighten.
5. Manually move carriage plate to align coupler and motor.
6. Check for proper shaft engagement on both sides (per coupler manufacturer specs).
7. Once system is aligned, final torque all fasteners appropriately (See Table 3).
8. Install cover on pins in casting (snaps in place).
Assembly Procedure – Vertical Belt Driven System

SIMO SERIES UGA WITH VERTICAL BELT

Components:
- Base actuator unit
- Motor (customer supplied)
- Motor Mount Kit
  - Motor Plate
  - Main Frame
  - Cover
- Coupler (customer supplied)

Fasteners: (7) M4 x 12 mm SBHCS (supplied by PBC Linear), (4) Customer supplied motor fasteners (See Table 2)

Tools Required: Hex Key (See Table 1)

Suggested Thread Locker: Blue Loctite® 242 or equivalent

SIMO SERIES – UGA (LOW PROFILE)

TABLE 1

<table>
<thead>
<tr>
<th>Hex Key Size Needed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3 SHCS = 2.5 mm Driver</td>
</tr>
<tr>
<td>M4 SBHCS = 2.5 mm Driver</td>
</tr>
<tr>
<td>M5 SHCS = 4 mm Driver</td>
</tr>
</tbody>
</table>

TABLE 2

<table>
<thead>
<tr>
<th>Customer Supplied Fasteners:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEMA 17 Motor = M3 x 0.5 SHCS</td>
</tr>
<tr>
<td>NEMA 23 Motor = M5 x 0.8 SHCS</td>
</tr>
<tr>
<td>60 mm Servo Motor = M5 x 0.8 SHCS</td>
</tr>
</tbody>
</table>

TABLE 3

<table>
<thead>
<tr>
<th>Fastener Torque Values:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3 SHCS = 8-10 in/lb [1.0-1.2 Nm]</td>
</tr>
<tr>
<td>M4 SBHCS = 17-21 in/lb [2.0-2.4 Nm]</td>
</tr>
<tr>
<td>M5 SHCS = 37-45 in/lb [4.2-5.1 Nm]</td>
</tr>
</tbody>
</table>

ASSEMBLY STEPS

1. Install main frame to pulley housing using hex key and (4) M4 x 12 mm SBHCS. Snug fasteners, but do not tighten.
2. Slide coupling onto shaft and leave loose.
3. Install motor plate to main frame using (3) M4 x 12 mm SBHCS. Apply blue Loctite® 242 or equivalent threadlocker and torque to 17-21 in/lb [2.0-2.4 Nm] (See Table 3).
4. Install motor to motor plate with customer supplied fasteners (See Table 2) and install shaft into coupling. Snug fasteners, but do not tighten.
5. Manually move carriage plate to align coupler and motor.
6. Check for proper shaft engagement on both sides (per coupler manufacturer specs).
7. Once system is aligned, final torque all fasteners appropriately (See Table 3).
8. Install cover on pins in casting (snaps in place).